



RESEARCH ARTICLE

Extent of Getting Generative AI Accommodated by Traditional Intellectual Property Laws (Comparative Analytical Study)

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ABSTRACT

Techniques of the generative artificial intelligence contribute to make significant shifts in the world of content creation, extending from arts and music to literature and software development. This progress requires reviewing and updating the legal framework of world intellectual property in general and that of the Egyptian intellectual property in particular, in order to keep pace with those achievements and ensure protection for the works result from that technology. The meant study focuses on assessment of the extent of Egyptian laws, pertaining to intellectual property, to accommodate the innovations created by generative artificial intelligence, while underscoring the existing legal loopholes and proposing legislative amendments aimed to enhance legal protection of creators, beneficiaries and the entire society. The study relied on the methodology of comparative legal analysis with compared systems such as the European Union, United States and China to clarify similarities and differences relevant to subject of the study, in addition to reviewing the Egyptian efforts intended to enhance and confront the challenges of the generative artificial intelligence and its generated content it generates. The study concluded that it is necessary to update to the Egyptian legislations pertaining to intellectual property to include the challenges related to the content generated by the generative artificial intelligence. The research reached a set of results and recommendations, the most important of which are:

- Amend Egyptian intellectual property law No. 82 of 2002 to regulate AI use
- Clearly identify legal responsibilities for intellectual property infringement by AI developers or users.
- Adapt laws to rapid technological developments with continuous review mechanisms.
- Provide training and resources for legislators and judges to understand AI challenges and assess its economic impacts on intellectual works.

INTRODUCTION

Intellectual property is essential for protecting human creativity and promoting innovation. However, AI developments pose new challenges to existing legal systems. AI-generated artistic and literary works show impressive capabilities but lack the human element required by traditional IP laws. The legal challenge is defining “author” in the AI era. Can software be considered an “author”? If not, who owns the produced works? This also requires a re-evaluation of the standards of creativity and originality, because

AI relies on data and algorithms that have been previously developed by human. Does AI-generated content deserve legal protection as creative work? Future laws should include AI-generated works, possibly requiring new legislation or amendments to existing laws. This ensures protection of human creators' rights and supports AI advancement. Traditional IP laws' inability to accommodate technological development complicates regulation and negatively impacts rights and society.

Research Importance

Studying how applying intellectual property laws is appropriate to generative artificial intelligence and the content it produces is gaining growing significance due to several key reasons:

Identifying ownership of generative AI-generated content, and this poses a contemporary legal challenge.

Seeking a legal balance that protects intellectual property rights and allows continuous development of new techniques.

The need for laws that address challenges of the generative artificial intelligence, especially in light of the shortcomings shown by existing laws.

Research problem

Several legal problems arise when generative AI creates content, requiring precise analysis:

Generative AI uses pre-existing data from various online sources, potentially infringing on copyright.

Intellectual property rights require the author to be a natural human, conflicting with generative AI's nature.

Existing laws demand originality, innovation, and creativity. It's challenging to determine if AI-generated works meet these criteria under traditional laws.

Legal responsibility for harms caused by AI-generated content is unclear: is it the developer, the user, or the AI system itself?

Research Objective

Analyze potential copyright infringement due to generative AI using pre-existing data.

Address the inconsistency of current intellectual property laws requiring authors to be natural human beings.

Determine the originality and innovation of AI-generated works under traditional intellectual property laws.

Identify who is legally responsible for harms caused by AI-generated content (developer, user, or AI system).

Previous studies and reports:

The previous studies and reports addressed how existing intellectual property laws accommodate generative AI and its challenges. There are two opinions:

-First Opinion: No need to redraft current laws. Entrepreneurs and technologists support this view:

Current laws can handle AI challenges.

AI is still developing, making it hard to predict future changes for legal systems.

Legal regulation may hinder AI development and intellectual creativity; technological regulation is preferred, (Neuman, 2023) (Broughel,2023) (Lobel,2023),(Nolan, D,2024) (Sharma,N,2023)

-Second opinion: The necessity to draft new laws or amend existing ones. Jurists and lawmakers support this view:

AI challenges require specific legal measures.

Dedicated AI laws are needed to protect intellectual property rights and control its use.

AI is a specialized field deserving specific legislation to address its challenges. ((UNESCO, 2023) ,(Karim,2023) (Custers,2022)

1- A study by the CREATE Center at Glasgow University concludes that new laws are unnecessary to protect generative AI works. AI's role is limited to executing tasks directed by human creators, who control shooting and editing. According to the study, AI works are similar to animation and Adobe Photoshop. In the UK, authors' rights already protect such outputs if they meet originality criteria and fall under protected categories. (Kretschmer et al. 2022)

2- A study by the Intellectual Property and Competition Law Center at Zurich University and the Swiss Intellectual Property Institute, titled "AI and IP: Theory to Policy and Back Again," concludes that traditional intellectual property law is based on the idea of a human creator. This is especially true for authors' rights, as works must have a natural person as the author. While it's important to grant some form of intellectual property protection to AI systems, there is no need to provide copyright protection for their output (Peter Georg Picht & Thouvenin, 2023)

3- A study titled "Blurring the lines: how AI is redefining artistic ownership and copyright" concluded that existing author rights laws need urgent updates to keep pace with AI's rapid development. Existing legal frameworks are inadequate, necessitating the establishment of new regulations to effectively govern AI and its associated challenges, thereby safeguarding the rights and interests of both creators and consumers(Watiktinnakorn et al., 2023)

4-The study "Dawn of a New Era for Generative AI" conducted by McKinsey in 2023 highlights the significant advancements in generative AI tools and emphasizes the need to manage the associated risks. (McKinsey, 2023) Similarly, a UN report outlines the potential characteristics and challenges of generative AI, emphasizing the need for its integration with existing legal frameworks.(, (Henz,2021)

RESEARCH METHODOLOGY:

In this paper, I will use a comparative analysis approach to explore how the Egyptian legal system can address the challenges posed by generative AI. I will assess various legal systems, highlighting their similarities and differences. Additionally, I will examine legal cases from comparative judiciaries and review relevant academic principles and research reports. This approach will help us understand how different laws address the challenges of generative AI and provide recommendations for Egyptian legislators to keep pace with rapid developments. I have selected specific countries for comparison to benefit the Egyptian legislative system As follows:

European Union: The EU has an advanced and complex legal system that balances protecting individual rights and promoting innovation.

United States: The US has the world's largest technology market and advanced intellectual property laws, reflecting the Western legal approach.

China: As a leading country in artificial intelligence, China represents the legal approach in Asia.

Research plan: The research consists of three chapters divided as follows:

Chapter One: Comparative Analysis of AI Legislations

Comparative analysis of AI legislations.

The Arab Republic of Egypt

European Union

The United States of America

Republic of China

Chapter Two: Differences Among Legal Systems Over Regulating Generative Artificial Intelligence:

Differences among legal systems over regulating Generative artificial intelligence:

Similarities among these systems

Chapter Three: Legal Analysis of Comparative Judiciary's Stance Towards Dealing with Generative AI and Its Generated Content

Legal analysis of comparative judiciary's stance towards dealing with generative AI and its generated content:

Originality

Fixation

Whom can the authorship of AI-generated content be attributed to?

Hypothesis of applying fair use as an exception to AI-generated content.

Legal responsibility for the harms caused by artificial intelligence:

Legal responsibility of service provider in case of infringement:

Bad-will provider

Good-will provider

Previous Judicial cases:

Conclusion: It contains the most important results and recommendations.

Chapter One: Comparative Analysis of AI Legislations

In this chapter, I will present a comparative analysis of different legal systems and their methods to see

the extent to which they can be applied to the generative AI- generated content in order to show findings and recommendations. We will begin with Egyptian legislations, then EU, after that the US and finally China.

The Arab Republic of Egypt

Egypt follows civil law and international IP treaties, providing legal protection for creative works and innovations. In this context, the AI market in Egypt is estimated to be around \$877.30 million in 2024, with a compound annual growth rate of 28.63% until 2030.” (Egyptian AI Market Report, 2024)

AI is regulated under various laws, including the Personal Data Protection Act (Law No. 151 of 2020) and the Communications Regulation Act (Law No. 10 of 2003). These laws emphasize privacy, data security,(Azab,2023), (Muhammad,2023) and digital data management but don't directly address AI-generated works.

Egypt's national AI strategy and the Egyptian Charter for Rational AI highlight responsible and ethical AI use. Law No. 163 of 2023 (Egypt, 2023) established the Egyptian Intellectual Property Apparatus to balance IP protection with economic and cultural development, fostering innovation and supporting the knowledge economy.(European Union, 2024.) ,(Ismail,2024), Egyptian Intellectual Property Protection Law No. 82 of 2002)

European Union

European Union: The EU has uniform IP rights legislation while maintaining member states' national laws. It protects innovation patents, author rights, trademarks, designs, and plant varieties. Key principles for regulating generative AI and AI-generated content include: (European Commission, 2024)

Establishing a homogeneous regulatory framework to enhance the domestic market and promote trade and knowledge exchange.

Developing a regulatory approach that classifies applications by risk levels, focusing on high-risk applications.

Approving pioneering legislation to balance consumer protection and technological innovation.

Proposing ambitious legislative measures for transparency in all AI systems used for general purposes. These principles reflect the EU's commitment to a legal framework that keeps pace with technological advances and protects basic rights and privacy in the AI era. (McFarland.2023), (Moerland,2022).

The United States of America:

The United States relies on federal law to protect intellectual property, including patents, author rights, trademarks, and confidential commercial information. The regulation of generative AI and its content is taken seriously. In October 2023, President Joe Biden issued an executive order to promote safe, responsible, (White House, 2023).and trusted AI development and use Following this, several states considered and ratified new legislation to improve government services and address data security and privacy challenges. (Roberts,2021). The US Ministry of Commerce (Ministry of Commerce,2023) invited contributions from stakeholders to form a comprehensive vision for AI systems, (EU Artificial Intelligence Act, 2024) reflecting the administration's commitment to basic rules in this context (White House, 2023) Open AI also requested strict safety assessments for its AI systems, highlighting the need for a comprehensive regulatory framework. (Rangwala, A,2024) (Kauffman,2020).

Republic of China

China recognizes intellectual property rights, protecting patents, author rights, trademarks, and confidential information. The country is committed to regulating generative AI and its content. In July 2021, Shenzhen City passed China's first domestic AI regulations, defining AI and setting proactive rules. In October 2023, "Temporary Measures to Manage Generative AI Services" were issued and took effect on August 15, 2023. These measures cover AI-generated texts, photos, audio, video, and other content. (Rangwala, A,2023) , (Yi, Z,2022), These actions reflect China's intent to control generative AI technologies within its borders, impacting the global AI landscape. However, challenges in law implementation remain.

Chapter Two: Differences Among Legal Systems Over Regulating Generative Artificial Intelligence

Legal systems worldwide differ in regulating generative AI based on technological development, national priorities, and existing frameworks. Notable examples include:

European Union: Issued comprehensive legislation to classify AI technologies by risk, imposing strict restrictions on high-risk technologies.

United States: Focuses on protecting intellectual property and user safety, with less emphasis on comprehensive AI regulation.

China: Imposes strict restrictions on data usage and AI development to enhance national security and protect personal data.

Egypt: Needs to update laws to include AI-generated works, proposing amendments to Intellectual Property Law No. 82 of 2002. These differences require international cooperation and continuous legal updates to keep pace with AI advancements, (Morales, 2024) (Hine,2024)

Similarities among these systems:

Technological innovation: These countries agree on the importance of regulating generative AI.

Data protection: All emphasize privacy and data security within AI systems.

Ethical and security balance: They seek to balance technological advancement with ethical and security concerns. These similarities and differences highlight each country's commitment to generative AI while respecting their unique contexts.

Next, I will examine how comparative judiciaries address regulating generative AI and its content by reviewing key lawsuits. These cases help define legal liability for companies and individuals using AI, especially when copyrighted data is involved. They also underscore the importance of human innovation and protecting AI-generated works. Over time, these lawsuits aid in developing policies and regulations, promoting AI innovation while maintaining intellectual property rights. They encourage researchers to analyze legal texts, contributing to a balanced legal framework for IP and AI.

Legal analysis of comparative judiciary's stance towards dealing with generative AI and its generated content:

Recent judicial rulings in the US and EU highlight challenges in owning AI-generated artworks. Courts have generally not recognized copyrights for works created without direct human intervention. For example, a Washington court ruled that AI-generated artworks do not meet the criteria for legal protection under US law, supporting the US Copyright Office's decision to reject Steven Thaler's request for AI system DABUS. Both the American and European judicial systems maintain that the element of

human creativity is a fundamental prerequisite for the conferment of legal protection. (Hanson, 2023)

In the UK, the Supreme Court affirmed that only natural persons can hold intellectual property rights, excluding AI. Attempts to include AI as inventors under patent law have been rejected.

On March 8, 2024, three authors filed a lawsuit against Nvidia Corporation, alleging that Nvidia used their copyrighted works to train the AI program “NeMo Megatron-GPT” without permission. (Quiver,2024) The legal action seeks monetary damages and the eradication of all unauthorized reproductions. (Chatterjee, 2023), These cases highlight the need for legal amendments to address the complexities of using AI in content creation and the potential for copyright infringement. Legal procedures against OpenAI and Microsoft, including a lawsuit by The New York Times, highlight renewed challenges in AI and copyrights. The companies are accused of using the newspaper’s content to develop AI systems without permission, infringing on intellectual property rights. A lawsuit against GitHub Copilot, which uses OpenAI’s Codex model, alleges it was trained on publicly available code, violating copyright and licensing terms. In May 2023, the judge denied the defense’s motion to dismiss the case, underscoring the necessity of addressing the legal implications of AI within the framework of intellectual property laws.(Connatser, 2024). (Salim, K,2024), In 2022, Getty Images filed a lawsuit against Stability AI for using copyrighted images to train smart models. Getty Images claims that images produced through Stable Diffusion technology are derived works and subject to original copyrights. In a decisive move, Getty Images prohibited AI-generated content on its platform, underscoring the intricate legal issues posed by technological advancements and intellectual property rights. (Getty Images (US), Inc. v. Stability AI, Inc., 2023). In the EU, a 2019 memorandum allows data mining of publicly available texts and copyrighted materials for scientific research without consent from copyright holders. However, for commercial purposes, rights holders can object and define terms on This exception is designed to foster the development of data mining tools while simultaneously safeguarding the rights of intellectual property holders. This memorandum is part of efforts to update copyright laws to keep up with technological advancements and support AI research and innovation. It aims to provide a legal framework for AI to learn and create while maintaining copyright for original works. Reviewing key lawsuits highlights the need for new legislation to address AI challenges.

AI is emerging as a key element in content creation, with the human element remaining central. AI is divided into three categories impacting content production:

Functional AI: Performs smart tasks within a limited scope, like data analysis, without self-awareness.

Advanced AI: Learns and develops like humans but is still in research and development stages.

Content Creation AI: Uses machine learning and natural language processing to generate specialized content. Human guidance is crucial in all AI categories. AI facilitates routine tasks, (Voeneky, Kellmeyer, Mueller, & Burgard, 2022), but human creativity and critical analysis are indispensable. Despite AI’s ability to create seemingly unique content, it lacks self-awareness and independent thought, raising challenges in intellectual property rights and originality (17 U.S.C. § 102, 2024). This issue is widely debated.

Originality:

Traditional legal systems require originality for intellectual protection, assuming human creativity comes from conscience and self-will, (Gaffar,2024). AI lacks these human traits, raising questions about applying originality to machine-generated works, especially those based on pre-prepared databases. Examples include Iamus software composing music and Zachary Scholl’s software producing a poem, highlighting the challenges of defining originality in AI (Peter Georg Picht & Thouvenin, 2023).

Fixation:

AI can produce content in physical or digital media, making it subject to intellectual property rights. (Wadinambiarachchi et al., 2024), AI software can write books, paint, or compose music, potentially eligible for legal protection despite lacking human passion or intent.

A key question is whether AI-generated creations can be attributed to AI as an “author.” Ethical rights are based on human traits like feeling, awareness, perception, will, and intention, (Azab,2022), which AI lacks. Thus, traditional laws don’t apply to AI from a theoretical perspective. The issue is whether the developer who designs and trains the AI or the user who operates it deserves these rights. This will be reviewed in the following paragraph.

Whom can the authorship of AI-generated content be attributed to?

The issue of attributing authorship to AI is a key legal and ethical debate. In the absence of specific legislation, several trends have emerged:

AI as the author: Some argue AI should be legally considered the author due to its ability to generate artworks.

Users as authors: Others believe users who guide AI to produce content should be considered the authors.

Developers as authors: Another view is that developers, who design and train AI models, should be attributed authorship.

AI model itself: Some propose that AI, especially with self-learning capabilities, deserves authorship.

Shared authorship: A final trend suggests both developers and AI should share authorship, as both contribute to the creative process.

Can AI be an inventor, in case it independently makes an invention without human intervention?

Artificial intelligence is a sophisticated cognitive system based on computer science, designed to perform mental operations similar to humans (Forough, 2024) such as self-learning, logical reasoning, linguistic analysis, perception, and strategic planning. This forms the basis for legal and ethical challenges in IP and copyrights in the AI era, making AI a powerful tool in literary creation (In the Courts: Australian Court Finds AI Systems Can Be ‘Inventors’, 2024). According to the World Intellectual Property Organization (WIPO),(Hugenholtz, 2021) (AI has two concepts: narrow and general. Narrow AI performs limited tasks based on specific instructions, while general AI can perform intellectual tasks that mimic or exceed human abilities. The legal challenges primarily lie with general AI (Neelbauer, 2024). Ethical questions assess whether AI should have rights similar to humans and if AI is “creative” enough for legal protection. European laws address data mining and public access to copyrighted content, impacting AI development and authors’ rights. We face a complex web of ethical and legal questions that need exploration to find sustainable solutions.(Hristov,2017), On December 24, 2019, the Nanshan People’s Court in Shenzhen ruled that AI-generated content created by Tencent’s Dreamwriter software belongs to Shenzhen Tencent, granting it copyright protection. The court determined that Shanghai Yingxun Technology had violated these rights by republishing the article without authorization, resulting in an order to pay 1,500 yuan in damages (Zhou, Bo, 2022). This case underscores the dynamic evolution of copyright laws in relation to AI-generated content and the persistent legal challenges in this domain. (Beijing Internet Court Grants Copyright Protection for AI Artworks, but Copyrightability Debate of AI-Generated Output Continues, n.d.), (Wong, 2024) A case involved a photo automatically shot by a camera on a hot air balloon, used by the defendant in a promotional video. The court ruled the photo was protected under Chinese copyright law and ordered compensation for the plaintiff. This case highlights judicial

approaches to AI and copyrights. The issue lies in comparing AI to natural persons rather than non-human entities. AI is seen as a tool without self-awareness or independent intent, thus not granted legal personality. AI cannot be considered an author due to the lack of human traits like awareness and creativity. Consequently, AI-generated works are not protected under traditional copyright laws. The U.S. Copyright Office declined to grant copyright protection to photos generated by artificial intelligence. However, it acknowledged Kris Kashtanova as the author of the accompanying text, thereby safeguarding her creative contributions. So, the trend that rejects granting copyrights to AI-generated works believes that instructing to produce a certain work is not sufficient to be considered the accepted creative contribution necessary to grant these rights AI (Chesterman, 2020). If legal personality is granted to serve the interests of law and society, what benefit would society and law gain if it were granted to artificial intelligence? (Kurki, 2019) Particularly, as the technological characteristics of artificial intelligence, under existing laws, are not sufficient to justify granting it this personality. On the other hand, artificial intelligence is not considered parallel to a legal person, as the capabilities of artificial intelligence differ from those of legal persons. Its capabilities make it independent of a natural person's will, allowing it to produce new content from the data used in its training, unlike a legal person who is represented by a natural person acting on its behalf. Given the specificity of these hypotheses, existing legislation should be developed to reflect the new capabilities offered by technology, particularly as some jurisprudential opinions believe it is possible to add a new category to persons of law and grant artificial intelligence technological legal personality. (World Economic Forum, 2024), to support development, the concept of legal personality should expand with technological advancements, allowing legal protection for AI-generated works under natural persons' supervision. Jurisprudence and technology experts must set criteria to balance programming and AI independence, ensuring protection for AI-generated innovations. Without proper legal protection, copyright owners may face economic challenges as AI can create similar content, reducing human creators' financial incentives. Consumers might prefer AI-generated content over licensed works, impacting copyright owners' revenue. (Azab, 2021). Protected works could be modified and redistributed in ways that defame original creators and violate their moral rights, such as the right to recognize authorship and object to modifications that distort the original work. While AI can generate high-quality content based on input data, its ability to innovate may remain limited compared to humans, impacting originality in intellectual fields (Lim, 2024). Techniques like block chain (Azab, 2023) can help detect copyright infringements and prove ownership, enhancing protection mechanisms (Mariani, 2020). Legislative recognition of collaboration between humans and generative AI could enhance creative capabilities (Vincent, N, 2023) and expand creation boundaries (European Union Publications, 2023) though this is still debated. Regarding AI as an inventor, Dr. Steven Thaller's request for a patent in the name of an AI apparatus was initially rejected by the American Patents Bureau, (Zhuk, A. (2023) as current laws require inventors to be natural persons. Although a federal court ruled in favor of AI being an inventor under the Australian Patents Act, this decision was later overturned by the Australian Supreme Court. (K, Kariyawasam 2020), (Congressional Research Service, 2023)

Upon this decision, several implications for the future of patents might arise:

If artificial intelligence is recognized as an inventor, this will be solely for patent registration purposes, without granting it additional rights or liabilities.

A natural or legal person will be responsible for operating AI and any legal commitments from its inventions.

Automation and AI might replace some traditional jobs but could also create new roles in technology and programming. To address these issues, amendments to the IP Act are suggested:

Amend IP Act to include AI as potential inventors, considering modern technological developments.

If AI meets the legal criteria for inventing, such as seriousness, innovation, and industrial application, AI-generated works should be eligible for patents.

Additionally, the extent to which AI-generated content is considered derivative work and the application of the fair use principle should be examined.

Distinction between derivative works and AI-generated works:

To differentiate between derivative works and those created by artificial intelligence, several fundamental criteria can be taken into account: Original Source, Human Intervention, Intellectual Property Rights, Innovation and Creativity, Style and Technique.

Original Source: Derivative works modify existing content, while AI-generated works are created independently by AI. (Smits et al., 2022)

Human Intervention: Derivative works require significant human effort, whereas AI-generated works involve minimal human input. (Appel et al., 2023)

Intellectual Property Rights: Derivative works are protected by the original work's rights, needing permission for use. AI-generated works may have new rights, but ownership is debated. (Shah, 2024)

Innovation and Creativity: Derivative works apply creativity to modify the original, while AI-generated works use AI technology to create new content. (Matulionyte et al., 2022)

Style and Technique: Derivative works may retain the original style, while AI-generated works often use new techniques enabled by AI. (Cavella, 2023)

Hypothesis of applying fair use as an exception to AI-generated content.

Fair use is a legal exception allowing the use of copyrighted materials in certain contexts without permission or payment. This applies to all forms of content, including photos, animations, texts, software, and any work with personal creativity. Fair use is assessed based on four standards:

Purpose of use: Educational and non-profit uses are prioritized over commercial ones.

Nature of the work: Characteristics of the protected material.

Amount and essence used: No fixed rule on the allowable ratio for fair use.

Impact on market value: Effect on the potential revenue from the original work.

To apply fair use to AI-generated content, intellectual property laws must adapt to AI advancements. Technology can help create databases of copyrighted works, enabling AI to respect authors' rights and set clear criteria for fair use. AI can also trace and document content usage to protect creators' rights.

Encouraging creators to grant prior licenses can help AI legally use content. Training and raising awareness about intellectual property and fair use will promote legitimate content use (WIPO, n.d.), (Lim, 2023), (Addressing Copyright Infringement and Challenges in AI Training | Article | Chambers and Partners, 2024) As AI evolves, defining legal responsibility for copyright violations by AI is a challenge. Traditionally, AI lacks legal personality, so responsibility falls on developers and users. This requires reviewing legal opinions on the matter.

Legal responsibility for the harms caused by artificial intelligence:

Questions about legal responsibility for infringing AI-generated content have arisen. Should developers be responsible, or should the AI system itself be responsible?

AI itself is legally responsible: Some hypotheses suggest AI can work autonomously and should carry independent legal responsibility for infringements.

Suppliers or developers are responsible: Creators and developers can be held responsible for violations resulting from AI use, depending on circumstances and legislative frameworks.

Joint legal responsibility: Responsibility can be shared among multiple parties involved in developing and running AI, including the smart systems themselves. (Guadamuz,2024) , (Sun,2022), Legal systems do not grant legal personality to AI, as per Article 1242 of the French Civil Act, treating it as things under user control. European Civil Acts on robots also acknowledge the insufficiency of current legal frameworks to regulate AI, (Qasim,2020) and its violations. Since AI is not considered an author, it does not carry responsibility for violations. Responsibility varies based on the service providers' knowledge of the violation and the nature of their intervention.

Legal responsibility of service provider in case of infringement:

When it comes to responsibility of AI provider in case of violating trademarks or other rights on a website, they are divided into two sections

Bad-will provider: Should AI provider be aware of infringement and has not offered enough activity to prevent it, it could be responsible for that infringement, and should it have effective procedures to remove the content, it should take such procedures.

Good-will provider: If the AI provider is not aware of violation and has not offered a positive activity to prevent it, it will not be responsible for violation, therefore, if there are trademarks being violated on the website and the provider is not aware of this violation, it will not be responsible.

Previous Judicial cases: The following legal cases are important references for defining responsibility:

Coty v. Amazon: Amazon was held responsible for violations due to insufficient action to prevent them.

Google and eBay cases: Google was not held responsible as it was unaware of the violation.

Internet Court in Hangzhou: The court ruled that a trading platform failed its duty of care by not preventing NFT infringement, ordering the deletion of infringing works and compensation for the plaintiff. Responsibility depends on individual circumstances and the AI provider's knowledge. Effective procedures to handle infringements are essential. (Pattloch,2022) The US Supreme Court is reconsidering laws that grant electronic platforms immunity, aiming to balance freedom of expression and societal protection. Responsibility for AI-caused harms is also being considered within insurance frameworks. If holding programmers, owners, or users accountable (Wahba,2023) is difficult, (Ramalho,2021) an insurance system for damages is proposed, using AI companies' capital as a guarantee for creditors.

CONCLUSION AND RECOMMENDATIONS:

I have highlighted the multiple challenges posed by generative artificial intelligence, emphasizing the need for a precise assessment of the existing legal framework. In the following section, I will present recommendations to enhance the legal system to keep pace with AI developments:

Amend Act No. 82 of 2002 on Egyptian intellectual property rights to include AI-generated works, considering developers and legal authorities as owners.

Develop a registration system for AI-generated works using blockchain for transparency and validation.

Include provisions for patents, copyrights, and trademarks in line with generative AI technologies.

Clarify intellectual property rights and licensing mechanisms for AI-generated works, including terms of use and distribution.

Establish standards to protect AI-produced works and define authors' rights in joint authorship cases.

Update concepts of originality and innovation to include AI methods and control licensing contracts in line with data rights.

Highlight legal responsibilities for intellectual property infringement and indicate necessary legal procedures.

Ensure the amended act is flexible to keep up with technological advances and includes mechanisms for periodic updates.

Update systems to distinguish between human and AI-created works to ensure fair intellectual property rights.

Prepare training programs and resources for legislators and judges to understand AI technological challenges and introduce relevant legal amendments, considering the economic effects of AI.

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REFERENCES

- Amirjalili, Forough Masoud Neysani, & Ahmadreza Nikbakht. (2024). Exploring the boundaries of authorship: a comparative analysis of AI-generated text and human academic writing in English literature. *Frontiers in Education*, 9. <https://doi.org/10.3389/feduc.2024.1347421>
- Appel, G., Neelbauer, J., & Schweidel, D. A. (2023, April 7). Generative AI Has an Intellectual Property Problem. *Harvard Business Review*. <https://hbr.org/2023/04/generative-ai-has-an-intellectual-property-problem>.
- Azab, R. S. (2021). Interpreting digital licensing contracts between a metaphorical and functional direction: A comparative analytical study. *International Journal of ADVANCED and APPLIED SCIENCES*, 8(8), 103–112. <https://doi.org/10.21833/ijaas.2021.08.013>
- Azab, R. S. (2022). Website and digital content between material property and intellectual ownership rights within the legal regulation of internet. *IJCSNS International Journal of Computer Science and Network Security*, 22(2). <https://doi.org/10.22937/IJCSNS.2022.22.2.54>
- Azab, R. S., & Ismail, H. H. (2023). User privacy in the digital license contract between civil and criminal protection: Comparative analytical study. *Journal of Law and Political Sciences*, 1(1). <https://orcid.org/0000-7115-5769-0002>, <https://orcid.org/0000-5848-1198-0003>
- Azab, R. S., et al. (2023). The role of artificial intelligence in concluding digital contracts (A comparative analytical study). *Journal of Law and Political Sciences JLPS*, 38(3), 182. <http://journal-law.com/>
- Addressing Copyright Infringement and Challenges in AI Training | Article | Chambers and Partners. (2024). *Chambers.com*. <https://chambers.com/articles/addressing-copyright-infringement-and-challenges-in-ai-training>
- Beijing Internet Court grants copyright protection for AI artworks, but copyrightability debate of AI-generated output continues. (n.d.). *JD Supra*. <https://www.jdsupra.com/legalnews/beijing-internet-court-grants-copyright-8428550/>
- Broughel, J. (2023). Rules for robots: A framework for governance of AI. *SSRN*. <https://ssrn.com/abstract=4620277>

- Chatterjee, M. (2023, August 21). AI cannot hold copyright, federal judge rules. POLITICO. <https://www.politico.com/news/2023/08/21/ai-cannot-hold-copyright-federal-judge-rules-00111865>
- Cavella, C. (2023, August 15). AI & IP Rights: *Essential Legal Insights - IP Works Law*. IP Works Law. <https://ipworkslaw.com/who-owns-the-intellectual-property-rights-of-ai-generated-work/>
- Chesterman, S. (2020). ARTIFICIAL INTELLIGENCE AND THE LIMITS OF LEGAL PERSONALITY. *International and Comparative Law Quarterly*, 69(4), 819–844. <https://doi.org/10.1017/s0020589320000366>
- Congressional Research Service. (2023). Generative artificial intelligence and copyright law. Retrieved September 29, 2023, from <https://www.crsreports.congress.gov/product/pdf/LSB/LSB10922>
- Connatser, M. (2024, July 8). Coders' Copilot code-copying copyright claims crumble against GitHub, Microsoft. *The Register.com*; *The Register*. https://www.theregister.com/2024/07/08/github_copilot_dmca
- Custers, B., & Fosch-Villaronga, E. (Eds.). (2022). *Law and artificial intelligence: Regulating AI and applying AI in legal practice*. Information Technology and Law Series. Leiden University. <https://www.asser.nl/cleer/publications/relevant-asser-press-publications/?rId=13994>
- Egypt. (2023). Law No. 163 on the establishment of the Egyptian Intellectual Property Authority. *WIPO Lex*. Retrieved from <https://www.wipo.int/wipolex/en/legislation/details/22398>
- Egyptian AI Market Report. (2024). *Market analysis and growth projections*. Cairo: Egyptian Ministry of Communications and Information Technology.
- Egypt. (2002). Law No. 82 on the Protection of Intellectual Property Rights. Retrieved from <https://manshurat.org/node/13148>
- European Union. (n.d.). *European Union homepage*. Retrieved September 6, 2024, from https://www.eeas.europa.eu/euinarabic_ar
- European Commission. (2024, March 6). Regulatory framework on AI | Shaping Europe's digital future. European Commission. <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai>
- EU Artificial Intelligence Act. (2024, February 27). High-level Summary of the AI Act | EU Artificial Intelligence Act. EU Artificial Intelligence Act. <https://artificialintelligenceact.eu/high-level-summary/>
- European Union Publications. (2023). Study on the impact of artificial intelligence on the infringement. European Union Publications. Retrieved from <https://op.europa.eu/en/publication-detail/-/publication/83fb0f9e-b09f-11ec-83e1-01aa75ed71a1/language-en/format-PDF/source-search>
- GAFFAR, H., & ALBARASHDI, S. (2024). Copyright Protection for AI-Generated Works: Exploring Originality and Ownership in a Digital Landscape. *Asian Journal of International Law*, 1–24. <https://doi.org/10.1017/s2044251323000735>
- Getty Images (US), Inc. v. Stability AI, Inc., No. 1:23-cv-00135 (D. Del. filed Feb. 3, 2023).
- Gillotte, J. (2020). Copyright infringement in AI-generated artworks. *UC Davis Law Review*, 53(5). Retrieved from <https://lawreview.sf.ucdavis.edu/archives/53/5/copyright-infringement-ai-generated-artworks>
- Guadamuz, A. (2024). A scanner darkly: Copyright liability and exceptions in artificial intelligence inputs and outputs. *GRUR International*, 73(2), 111-127.
- Henz, P. (2021). Ethical and legal responsibility for Artificial Intelligence. *Discover Artificial Intelligence*, 1(1). <https://doi.org/10.1007/s44163-021-00002-4>
- Hine, E., & Floridi, L. (2024). Artificial intelligence with American values and Chinese characteristics: A comparative analysis of American and Chinese governmental AI policies. *AI & Society*, 39(1), 257-278.
- Hanson, E. (2023, September 6). What the latest US court ruling means for AI-generated art's copyright status. *Boston Globe*. Retrieved from <https://www.bostonglobe.com/2023/09/15/opinion/congress-artificial-intelligence-regulation>
- Hristov, K. (2016, September 1). Artificial Intelligence and the Copyright Dilemma. *Papers.ssrn.com*.

- https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2976428
- Hughenoltz, P. B., & Quintais, J. P. (2021). Copyright and Artificial Creation: Does EU Copyright Law Protect AI-Assisted Output? *IIC - International Review of Intellectual Property and Competition Law*, 52. <https://doi.org/10.1007/s40319-021-01115-0>
- Ismail, H. H., & Azab, R. S. (2023). The role of e-commerce as an innovative solution in the development of the Saudi economy. *Marketing and Management of Innovations*, 14(4), 225-268. <https://doi.org/10.21272/mmi.2023.4-19>
- Karim, S. A. (2022). Legal regulation of artificial intelligence: A comparative study. *Faculty of Law, Civil Law*. Retrieved from <https://uokerbala.edu.iq/Rp/Legal-regulation-of-artificial-intelligence-A-Comparative-study-.pdf>
- Kauffman, M. E., & Soares, M. N. (2020). AI in legal services: new trends in AI-enabled legal services. *Service Oriented Computing and Applications*, 14(4), 223–226. <https://doi.org/10.1007/s11761-020-00305-x>
- Kretschmer, M., Meletti, B., & Porangaba, L. H. (2022). Artificial intelligence and intellectual property: Copyright and patents—a response by the CREATE Centre to the UK Intellectual Property Office’s open consultation. *Journal of Intellectual Property Law and Practice*, 17(3), 321-326.
- Kurki, V. (2019). The legal personhood of artificial intelligences. In *A theory of legal personhood* (pp. 175-189). Oxford University Press.
- Kariyawasam, K. (2020). Artificial intelligence and challenges for copyright law. *International Journal of Law and Information Technology*, 28(4), 279–296. <https://doi.org/10.1093/ijlit/aaaa023>
- Lim, J. (2023). Generative AI: What it is, what it doesn’t have, and what it could mean for the UN. *United Nations*. Retrieved May 27, 2024, from <https://www.un.org/ar/208258>
- Lobel, O. (2023). The law of AI for good. *Florida Law Review*, 75, 1073.
- Lim, D. (2023). Generative AI and copyright: principles, priorities and practicalities. *Journal of Intellectual Property Law & Practice*, 18(12). <https://doi.org/10.1093/jiplp/jpad081>
- Mariani, M. (2022). Generative artificial intelligence and innovation: Conceptual foundations. *SSRN*. Retrieved October 16, 2022, from <https://www.ssrn.com/abstract=4249382>
- Matulionyte, R., & Lee, J.-A. (2022). Copyright in AI-generated works: Lessons from recent developments in patent law. *SCRIPT-Ed*, 19(1), 5–35. <https://doi.org/10.2966/scrip.190122.5>
- McFarland, A. (2023). For the key points of the EU’s new AI law, the first major regulation of artificial intelligence. Retrieved from <https://www.un.org/ar/208258>
- McKinsey & Company. (2023). The dawn of a new era for generative artificial intelligence. *McKinsey & Company*. Retrieved from <https://www.mckinsey.com/featured-insights/highlights-in-arabic/the-state-of-ai-in-2023-generative-ais-breakout-year/ar>
- Ministry of Commerce. (2023, October 30). Artificial intelligence. *U.S. Department of Commerce*. Retrieved from <https://www.commerce.gov/issues/artificial-intelligence>
- Moerland, A. (2022). Artificial intelligence and intellectual property law. *IDEA: The IP Law Review*, 57(3). Available at SSRN: <https://ssrn.com/abstract=4203360>
- Muhammad, M. M. A., & Ali, M. M. (2023). The extent to which civil law texts accommodate the facts of artificial intelligence: A comparative jurisprudential study. *Cairo Journal of Sharia and Law*, 42(42), 1305-1363.
- Morales, S. (2024, February 26). AI copyright infringement is a problem, here’s why. *Red Points*. Retrieved from <https://www.redpoints.com/blog/ai-copyright-infringement/>
- Neuman, W. R. (2023, September 15). Congress can’t regulate AI. It’s too complex. *Boston Globe*. Retrieved from <https://www.bostonglobe.com/2023/09/15/opinion/congress-artificial-intelligence-regulation>
- Nolan, D., Maryam, H., & Kleinman, M. (2024). Regulating artificial intelligence: An urgent but difficult task. *Amnesty International’s Technology Programme*. Retrieved from <https://www.amnesty.org/ar/latest/campaigns/2024/01/the-urgent-but-difficult-task-of-regulating-artificial-intelligence>
- Pattloch, T. (2022, June 20). Clearing the way by Chinese courts? – Comments on the first NFT copyright infringement decision made by the Hangzhou Internet Court in April 2022. *Munich*.
- Peter Georg Picht, & Thouvenin, F. (2023). AI and IP: Theory to Policy and Back Again – Policy and

- Research Recommendations at the Intersection of Artificial Intelligence and Intellectual Property. *International Review of Intellectual Property and Competition Law*, 54. <https://doi.org/10.1007/s40319-023-01344-5>
- Qasim, M. H. (2021). The moral damage and the juristic person in light of the two decisions of the Cassation Court (Commercial and Economic Division) issued on 10/03/2020 and 9/6/2020. *Deleted Journal, 2020(2020)*. <https://doi.org/10.54729/2958-4884.1056>
- Quiver Quantitative. (2024, March 11). AI's legal challenge: Nvidia's NeMo at the center of copyright infringement case. *Barchart*. Retrieved from <https://www.barchart.com/story/news/24708777/ais-legal-challenge-nvidias-nemo-at-the-center-of-copyright-infringement-case>
- Ramalho, A. (2021). Intellectual Property Protection for AI-generated Creations. <https://doi.org/10.4324/9780367823290>
- Rangwala, A. (2023, August 29). China's new rules for generative artificial intelligence: An emerging regulatory framework. *Entrepreneur Business News*. Retrieved from [URL]
- Rangwala, A. (2023, December 19). OpenAI Introduces New Governance Model For AI Safety Oversight - Open AI Master. Open AI Master. https://openaimaster.com/openai-introduces-new-governance-model-for-ai-safety-oversight/#google_vignette
- Roberts, H., Cows, J., Morley, J., Taddeo, M., Wang, V., & Floridi, L. (2020). The Chinese approach to artificial intelligence: an analysis of policy, ethics, and regulation. *AI & SOCIETY*, 36(36). <https://doi.org/10.1007/s00146-020-00992-2>
- Salim, K. A. (2023). Legal aspects of artificial intelligence. *JIL Journal of In-depth Legal Research*, 54, 53. <https://jilrc.com/archives/15801>
- Sharma, N. (2023, September 7). Regulating AI is a mistake. *Michigan Daily*. Retrieved from <https://www.michigandaily.com/opinion/regulating-ai-is-a-mistake>
- Shah, N. S. M. (2024, March 5). Intersection of Intellectual Property Rights and AI-Generated Works – Part I. Bar and Bench - Indian Legal News. <https://www.barandbench.com/law-firms/view-point/intersection-intellectual-property-rights-ai-generated-works-part-i>
- Smits, J., & Borghuis, T. (2022). Generative AI and intellectual property rights. In J. Smits & T. Borghuis (Eds.), *Law and artificial intelligence* (pp. 323-344). Springer. Retrieved from https://link.springer.com/chapter/10.1007/978-94-6265-523-2_17
- Sun, H. (2022). Redesigning copyright protection in the era of artificial intelligence. *Iowa Law Review*, 107, 1213-1251. University of Hong Kong Faculty of Law Research Paper No. 2022/47. Available at SSRN: <https://ssrn.com/abstract=4194558>
- UNESCO. (2023, September 8). Governments must urgently regulate the use of generative AI in schools. UNESCO. Retrieved from <https://www.unesco.org/ar/articles/alywnskw-yjb-ly-alhkwmat-tnzym-astkhdam-aldhka-alastnay-altwlydy-fy-almtdars-ly-wjh-alsrt>
- United States Copyright Office. (2023, February 21). Re: Zarya of the Dawn (Registration # V Au001480196). Library of Congress. Retrieved from <https://fingfx.thomsonreuters.com/gfx/legaldocs/klpygnkyrpg/AI%20COPYRIGHT%20decision.pdf>
- Vincent, N., Bau, D., Schwettmann, S., & Tan, J. (2023). An alternative to regulation: The case for public AI. arXiv preprint arXiv:2311.11350. <https://doi.org/10.48550/arXiv.2311.11350>
- Voenekey, S., Kellmeyer, P., Mueller, O., & Burgard, W. (Eds.). (2022). Responsible AI liability schemes. In *The Cambridge Handbook of Responsible Artificial Intelligence*. Cambridge University Press. <https://doi.org/10.1017/9781009207898.015>
- World Economic Forum. (2024). Using generative AI and protecting against copyright issues. World Economic Forum. Retrieved from <https://www.weforum.org/agenda/2024/01/cracking-the-code-generative-ai-and-intellectual-property/>
- Wadinambiarachchi, S., Kelly, R. M., Pareek, S., Zhou, Q., & Velloso, E. (2024). The effects of generative AI on design fixation and divergent thinking. In *Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24)* (pp. 18). ACM. <https://doi.org/10.1145/3613904.3642919>
- Wahba, W. (2023). Intellectual property protection for AI-generated creations. *Journal of Law and Social*

- Studies, 2(3), 137-269.
- Watiktinnakorn, C., Seesai, J., & Kerdvibulvech, C. (2023). Blurring the lines: How AI is redefining artistic ownership and copyright. *Discover Artificial Intelligence*, 3(1), 37.
- WIPO (n.d.). IP and Frontier Technologies. [Www.wipo.int. https://www.wipo.int/about-ip/en/frontier_technologies/ai_and_ip.html](https://www.wipo.int/about-ip/en/frontier_technologies/ai_and_ip.html)
- World Intellectual Property Organization. (2024). In the courts: Australian court finds AI systems can be 'inventors'. Retrieved May 27, 2024, from <https://www.wipo.int>
- Wong, L.-K. T., James Lau, Harrods. (2024, May 8). China: A landmark court ruling on copyright protection for AI-generated works. *Global Litigation News*. <https://globallitigationnews.bakermckenzie.com/2024/05/08/china-a-landmark-court-ruling-on-copyright-protection-for-ai-generated-works/>
- White House. (2023). Executive order on the safe, reliable, and trustworthy development of artificial intelligence. White House. Retrieved from <https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/>
- Yi, Z. (2022). China is responsible for the ethical governance of AI. *China Daily*. Retrieved from <http://epaper.chinadaily.com.cn/a/202211/23/WS637d9a55a31009d7c3da5312.html>
- Zhou, B. (2022). Artificial intelligence and copyright protection – Judicial practice in Chinese courts. *World Intellectual Property Organization*. Retrieved from https://www.wipo.int/ms_china_1_en.pdf
- Zhuk, A. (2023). Navigating the legal landscape of AI copyright: A comparative analysis of EU, US, and Chinese approaches. *AI and Ethics*, 1-8. Retrieved from <https://link.springer.com/article/10.1007/s43681-023-00299-0>
- 17 U.S.C. § 102. (2024). Subject matter of copyright: In general. *United States Code*. Retrieved from [https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title17-section102&num=0&edition=prelim#:~:text=\(b\) In no case does copyright protection for,described%2C explained%2C illustrated%2C or embodied in such work](https://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title17-section102&num=0&edition=prelim#:~:text=(b) In no case does copyright protection for,described%2C explained%2C illustrated%2C or embodied in such work)